Montana Comprehensive Assessment System (MontCAS CRT)

Grade 4
Common Released Items
Spring 2016

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Montana
Office of Public Instruction
Denise Juneau, State Superintendent

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Science Directions

This Science test contains three test sessions. Mark or write your answers in the Answer Booklet. Use a pencil to mark or write your answers.

This test includes two types of questions: multiple-choice and constructed-response questions.

For the multiple-choice questions, you will be given four answer choices—A, B, C, and D. You are to choose the correct answer from the four choices. Each question has only one answer. After you have chosen the correct answer to a question, find the question number in your Answer Booklet and completely fill in the circle for the answer you chose. Be sure the question number in the Answer Booklet matches the question number in the Test Booklet. The example below shows how to completely fill in the circle.

CORRECT MARK	INCORRECT MARKS
●	❍ ⊙ ◉ ⊘

If you decide to change your answer to a question, erase the wrong mark completely before filling in the circle of the new answer. Be sure you have only one answer marked for each question. **If two circles are bubbled in for the same question, that question will be scored as incorrect.**

If you are having difficulty answering a question, skip the question and come back to it later. Make sure you skip the circle for the question in your Answer Booklet.

For the other types of questions in the Test Booklet, you will be asked to write your answers in the box provided. Read the question carefully. If a question asks you to explain your answer or to show your work, be sure to do so.

You may make notes or use highlighters in your Test Booklet, but you must bubble or write your final answers in your Answer Booklet. **Do not make any stray or unnecessary marks in your Answer Booklet.**

Let's work through a sample question together to be sure you understand the directions.

Sample Question

1. What is the state animal of Montana?
   A. elephant
   B. giraffe
   C. grizzly bear
   D. zebra

Science

1. Students are making a solar cooker. They need to use a material that is able to reflect sunlight. Which material should the students use to make the solar cooker?

   A. cardboard

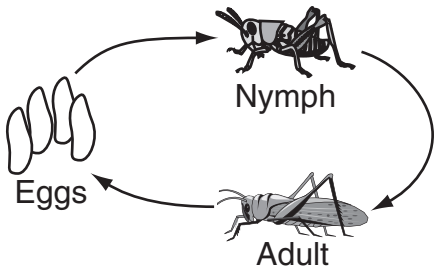
   B. metal

   C. paper

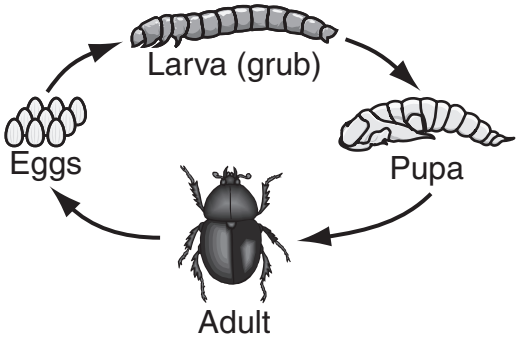
   D. sandstone

2. The pictures below show the life cycles of a grasshopper and a Japanese beetle.

Grasshopper Life Cycle



Japanese Beetle Life Cycle



How are the life cycles of a grasshopper and a Japanese beetle different?

A. Grasshoppers have a larva stage, and Japanese beetles do not.

B. Japanese beetles change form in the pupa stage, but grasshoppers do not.

C. Grasshoppers can eat and move during the larva stage, and Japanese beetles cannot.

D. Japanese beetles change from nymphs to adults, and grasshoppers do not.

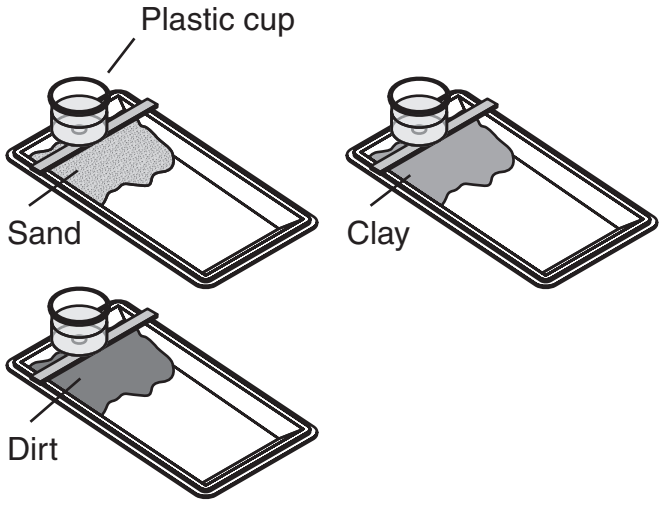
3. In 1995, a project began on the Blackfeet reservation of Montana. Wind turbines were built to change wind energy into electricity. How have the turbines **most likely** affected the local community?

   A. They attract more people to the area.
   B. They make people depend less on fossil fuels.
   C. They prevent windstorms from causing damage.
   D. They reduce the amount of electricity people use.

4. A student has a tree and a sidewalk in front of his house. The sidewalk started to crack as the tree grew bigger. Which statement **best** explains why the sidewalk cracked?

   A. The cold caused the sidewalk to become larger.
   B. The heat caused the sidewalk to become smaller.
   C. The tree roots grew deeper into the ground.
   D. The tree roots pushed against the sidewalk.

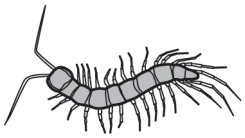
5. A student sets up three matching stream tables to investigate what effect water has on sand, clay, and dirt, as shown in the pictures below.



   At the bottom of each plastic cup there is a 3 mm hole. The same amount of water drips through each hole onto the sand, clay, and dirt. At the beginning of the investigation, what did the student change in each stream table to test his question?

   A. height of stream table
   B. type of earth material
   C. amount of water in each cup
   D. rate at which water drips from cups

6. Joe found a centipede, an ant, a spider, and a beetle in his backyard, like the ones shown below.



Centipede

Ant

Spider

Beetle

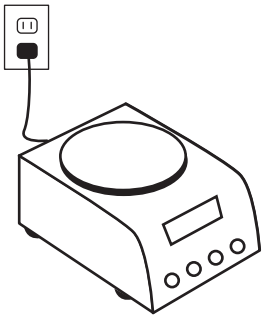
Which information could be used to sort the animals into three different groups?

A. how they move
B. how many legs they have
C. the types of foods they eat
D. the kinds of homes they make

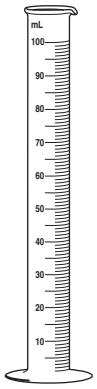
7. What is the **best** tool to use to see Jupiter?

A. magnifying glass
B. safety glasses
C. microscope
D. telescope

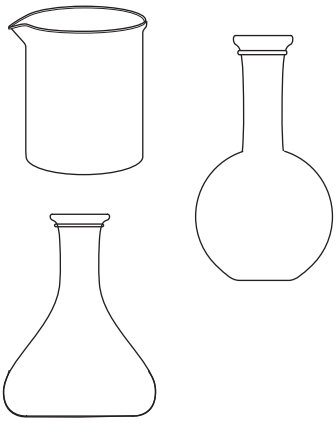
8. Students use baking soda, vinegar, potting soil, water, and other chemicals in an experiment. The students measure the wet and the dry materials using electronic balances and graduated cylinders. They also use many other pieces of glassware in the experiment.



Electronic balance



Graduated cylinder



Glassware

a. Give **three** safety rules needed for the experiment.

b. Explain why each safety rule you gave in part (a) is needed.

Scoring Guide

Score	Description
4	Response demonstrates a thorough understanding of lab safety when working in groups with chemicals, water, and electrical items. Response includes three lab safety rules and an appropriate reason each rule is important during the experiment.
3	Response demonstrates a general understanding of lab safety when working in groups with chemicals, water, and electrical items.
2	Response demonstrates a limited understanding of lab safety when working in groups with chemicals, water, and electrical items.
1	Response demonstrates a minimal understanding of lab safety when working in groups with chemicals, water, and electrical items.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Training Notes

Sample responses include the following:

- Students should wear eye protection when working with chemicals to prevent eye injuries. / working with chemicals
- Students should watch for water spills. Water can make floors slick; you may slip and fall. / working with water
- Students should watch for broken, cracked, or sharp-edged glass so they won't cut themselves. / working with glassware
- Students should work together and help each other and not play during lab to prevent injuries. / Group work is important and takes patience.
- Students should be very careful working with electrical items around water to prevent shock. / using electronic balances
- Students should read the procedure carefully and follow step by step to know what they are expected to do. / following a procedure
- Report all accidents immediately to the teacher. / to get help fast, reduce severity of injury
- Do not eat or drink in a lab. / Eating or drinking can cause poisoning.
- Closed toe shoes / prevent foot injury
- No loose clothing and short sleeves / prevents fire injury or chemicals injury.
- No jewelry / prevent chemical reaction on skin

6 points	= 4 score
5 points	= 3 score
3–4 points	= 2 score
1–2 points	= 1 score
0 points	= 0 score

Example of Score Point 4

(A) Safety rule 1 is be sure to wear glasses to protect your eyes. A second rule is wear protective clothing. The 3rd safety rule is no running around during the science experiment.

(B) (1) Wear glasses to protect eyes.

(2) Wear protective clothing to protect body from chemicals

(3) no running because someone could colide and knock over experiment or someone may get hurt.

Example of Score Point 3

(A) Frist put safty gogleson, Second put gloves on last put an apran on.
(B) The gogles are to portect your eyes. The gloves to pertect yourhands. last the apran is to pertect your clouse from geting stand.

Example of Score Point 2

a. 1. Ware gogles if any thing bad happens. 2. Have an adult or leagul gardein with you at the time being. 3. do everything in order so your experament dosen't go buserck.

Example of Score Point 1

AD. You need to make sure not to spill, do not drop the glass, and where gogles. BD. I said make sure not to spill because if you spill you could mess your experiment. I said don't drop the glass because so you don't get hurt, and I said where gogles because you do not want to get things in you eyes.

Example of Score Point 0

A. The Students should be very careful when they mix all of the chemicals.
B. They need to be careful because otherwise its going to be a big mess.

9. Read the text box below.

> A student told his teacher about a bright object with a tail of fire that he had seen falling in the night sky. The object had been moving at a high speed and looked far away.

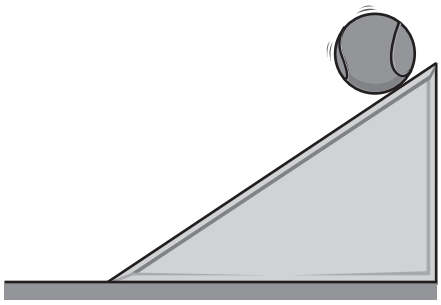
What was the student describing?

A. a meteor
B. the Moon
C. a planet
D. the Sun

10. Which of the following do Canada geese do to survive the cold winter months?

A. They grow white feathers.
B. They hide underground until spring.
C. They find places with fewer other birds.
D. They go to a different place to find food.

11. A student places a ball at the top of an inclined plane and releases it, as shown below.



Which force pulls the ball downward toward the floor?

A. electricity
B. friction
C. gravity
D. magnetism

12. Which statement describes a way that warm fronts and cold fronts are similar?

A. Both cause air temperature to rise.
B. Both bring a change in the weather.
C. Both bring snow and hail.
D. Both cause a rise in air pressure.

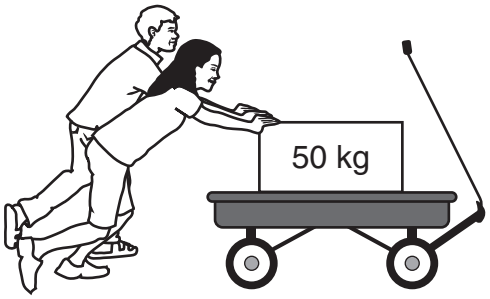
13. Two students will push a wagon across a flat playground. Which wagon will the students **most likely** push fastest if they push with the same amount of force each time?

A.

B.

C.

D.



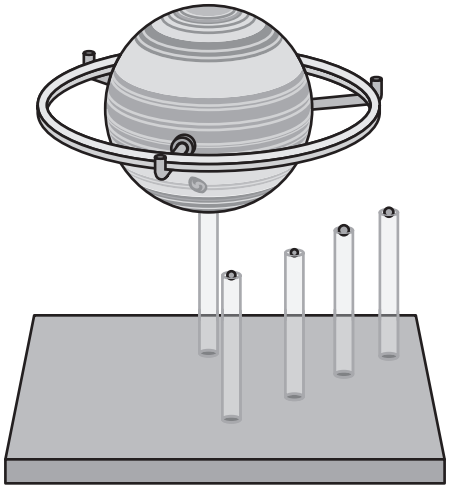
14. The box below contains descriptions of an Earth material.

- The material is home to all kinds of living creatures.
- Nature makes the material by using living things and weathered rock.
- Many kinds of plants grow and die and return to the material.

Which Earth material is being described in the box?

A. air
B. rocks
C. soil
D. water

15. A model of Jupiter and some of its moons is shown in the picture below.



What is one reason this type of model is used to teach students about Jupiter?

A. The model shows how Jupiter was formed.

B. The model shows what Jupiter is made of.

C. Jupiter is too large to be shown in a life-size model.

D. Jupiter has too few moons to be shown in a student-built model.

16. Foods eaten by four organisms are listed in the table below.

What Organisms Eat

Organism	Foods
W	Small animals such as mice
X	Leaves and small shrubs
Y	Nuts, berries, and insects
Z	Dead leaves and small dead animals

Based on the table, which organism is a carnivore?

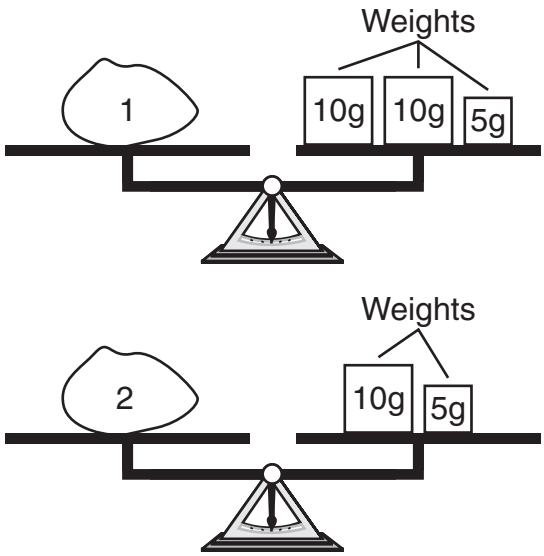
A. organism W

B. organism X

C. organism Y

D. organism Z

17. A student measures two objects on a scale to find out which object has more mass.



What is the **best** way for the student to describe the masses of the objects?

A. Object 1 looks the same as object 2, but object 1 weighs more.

B. Object 1 has a mass of 25 g, and object 2 has a mass of 15 g.

C. Object 1 is equal to three weights, and object 2 is equal to two weights.

D. Object 1 is equal to two big weights and one small weight, and object 2 is equal to one big weight and one small weight.

18. Many songbirds that migrate are in danger of becoming extinct. What is the **best** solution to this problem?

A. preventing oil spills

B. changing airplane routes

C. placing the songbirds in zoos

D. protecting the songbirds' habitats

19. Which information would **best** help doctors learn more about supplies that keep astronauts healthy in space?

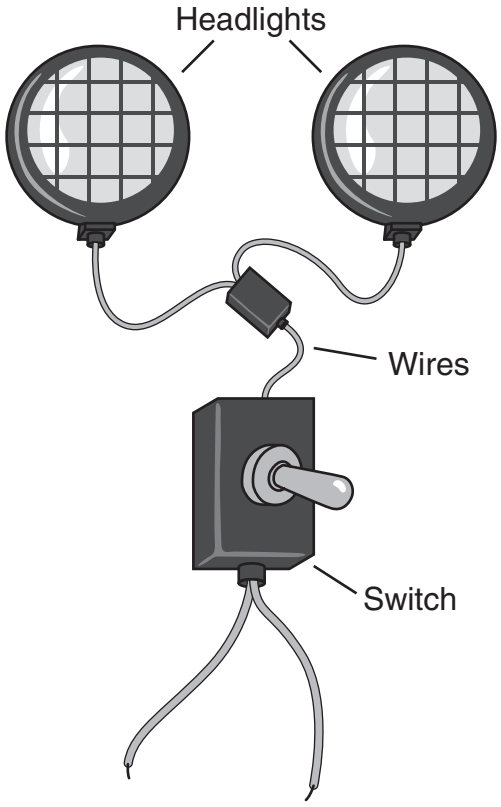
A. how much the astronauts eat and drink

B. how long the astronauts eat and drink

C. when the astronauts eat and drink

D. why the astronauts eat and drink

20. Two students built a circuit to add headlights to their go-cart. The diagram below shows the items the students used to make the circuit.



Which statement explains why the headlights do not light when the students turn on the switch?

A. The battery is missing.
B. The wires are not long enough.
C. There should be one headlight for each wire.
D. There must be a magnet to make electricity.

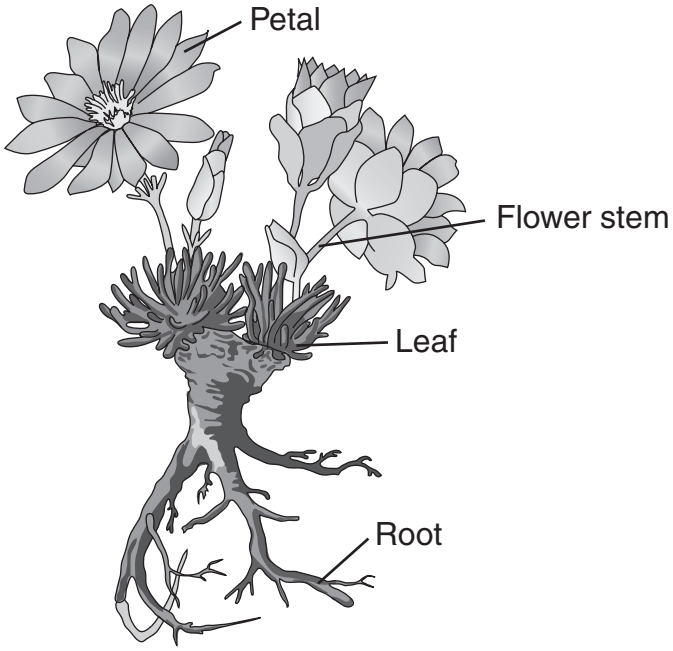
21. A student finds an object on the playground. How does the student know the object is a solid?

A. It feels warm.
B. It is heavy.
C. It has a fixed shape.
D. It floats in water.

22. The students in Mrs. Jordan's class can hear a movie that is playing in the next classroom. The doors and windows of the classrooms are closed. Which statement explains why the students in Mrs. Jordan's class can hear the movie?

A. Sound waves make echoes on the wall of the classroom.
B. Sound waves can move through solid materials.
C. Sound waves can build up in the wall of the classroom.
D. Sound waves travel very fast.

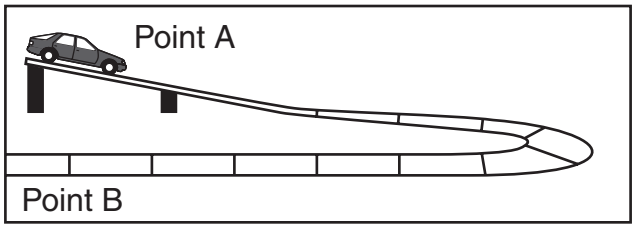
23. The picture below shows a bitterroot plant.



Which part of the plant absorbs the water and minerals the plant needs to survive?

A. flower stem
B. leaf
C. petal
D. root

24. A student wants to know if the starting height affects the time it takes for a toy car to go from Point A to Point B on a model raceway.



Which tool will help the student conduct this investigation?

A. balance
B. beaker
C. stopwatch
D. thermometer

25. Which process causes liquids to change into solids?

A. cooling
B. flowing
C. melting
D. steaming

26. What is one way bones are important to the human body?

A. They provide support for the body.
B. They remove waste from the body.
C. They pump blood through the body.
D. They break down foods in the body.

27. Which animal's body goes through the **most** changes before it becomes an adult?

A. dog
B. earthworm
C. fish
D. frog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